CLAIMS

1. Dynamic method of adding data at the nodes of a fiber optic transmission network comprising at least one source node, one destination node and a plurality of intermediate nodes, said nodes being connected by a fiber optic connection, said method comprising the following steps:

a) creating at the source node an optical resource comprising portions containing data packets addressed to said destination node and free portions that may be occupied by packets supplied by each of said intermediate nodes,

b) when said resource transits an intermediate node, detecting if said resource comprises free portions if said intermediate node has at least one data packet to transmit, and

c) adding said data packet to a free portion of the resource if said free portion may contain said data packet,

which method is characterized in that:

- the step b) consists in detecting the absence of optical signals; and
- the step c) consists in transmitting said data packet over the network if the step b) has detected absence of any optical signal for a time corresponding at least to the time of said data packet.

2. Method according to claim 1, wherein the optical data signals received by said intermediate node are delayed by a delay line for a time corresponding to the time needed to analyze and process said sampled portion of the optical signal.

3. Method according to claim 1, wherein the step b) comprises the following steps:

b1) converting the optical signal received by said intermediate node into an electronic signal,

b2) extracting the original data from said optical resource converted into an electronic signal and storing said data in a transit buffer memory, and

b3) detecting the absence of electronic signals if said transit buffer memory is empty.

4. Dynamic method of adding data at the nodes of a fiber optic transmission network comprising at least one source node, one

destination node and a plurality of intermediate nodes, said nodes being connected by a fiber optic connection, said method comprising the following steps:

a) creating at the source node an optical resource comprising portions containing data packets addressed to said destination node and free portions that may be occupied by packets supplied by each of said intermediate nodes,

b) when said resource transits an intermediate node, detecting if said resource comprises free portions if said intermediate node has at least one data packet to transmit, and

c) adding said data packet to a free portion of the resource if said free portion may contain said data packet,

which method is characterized in that:

- said optical resource is a macropacket comprising a header for at least determining the destination of said macropacket and data packets supplied at each of said intermediate nodes; and

- the step b) consists in determining the free portions of said macropacket by analyzing the content of said header.

5. Method according to claim 4, wherein the step b) comprises the following steps:

b1) converting the optical signal received by said intermediate node into an electronic signal bearing said macropacket,

b2) extracting the header of said macropacket and storing said header in a header buffer memory,

b3) extracting the original data from said macropacket and storing said data in a transit buffer memory, and

b4) analyzing the header by means of a state machine to determine if said macropacket comprises a free portion sufficient for addition thereto of said data packet.

6. Method according to claim 4, wherein the step b) comprises the following steps:

b1) converting the optical signal received by said intermediate node into an electronic signal bearing said macropacket,

b2) extracting the header of said macropacket and storing said header in a header buffer memory,

b3) extracting the original data from said macropacket and storing said data in a transit buffer memory, and

b4) measuring in said transit buffer memory the absence of data signals or measuring the time elapsed before the arrival of a new header to determine if said macropacket comprises a free portion sufficient for addition thereto of said data packet.

7. Method according to claim 4, wherein the step c) comprises the following steps:

c1) modifying said header stored in buffer memory as a function of said data packet to be added to the macropacket,

c2) transmitting, under the control of said state machine, a new macropacket comprising said modified header, said original data and said data packet that was previously stored in a data buffer memory, and

c3) converting said new macropacket into an optical signal to be transmitted over the network.

8. Method according to claim 4, wherein the step c) comprises the following steps:

c1) modifying said header stored in transit buffer memory as a function of said data packet to be added to the macropacket,

c2) deleting the original header with the aid of a switch situated upstream or downstream of said delay line,

c3) constructing, under the control of said state machine, a new macropacket resulting from the construction of said modified header, said original data delayed by said optical delay line and said data packet that was previously stored in the data buffer memory.

9. Method according to claim 4, wherein the free portions of said macropacket are simply analyzed during the step b) consisting of:

b1) sampling a portion of the optical signal received by said intermediate node by means of a sampling coupler (OPC) to convert said portion into an electronic signal, the other portion of the signal remaining in the optical domain,

b2) extracting the header of said macropacket carried by said electronic signal and storing said header in a header buffer memory,

b3) analyzing the header by means of a state machine to determine

the destination of said macropacket, and

b4) to determine the maximum duration of the data packet to be added, measuring in said sampled signal portion the time for which there is absence of signals.

10. Method according to claim 9, wherein said portion of the optical signal remaining in the optical domain is delayed in a delay line for a time corresponding to the time needed to analyze and process said sampled portion of the optical signal.

11. Method according to claim 9, wherein the step c) consists in transmitting over the network said data packet that was previously stored in data buffer memory if the step b) has detected absence of optical signals for a time corresponding at least to the time of said data packet.

12. System comprising means adapted to implement the steps of the method according to any preceding claim.